

Modeling the Conservation Impact of Differential Life History Strategies in *Tillandsia utriculata* & *Tillandsia fasciculata* – A Preliminary Report · Erin N. Bodines

Tillandsia utriculata and *T. fasciculata* are both large, long-lived epiphytes of the Bromeliaceae plant family. All bromeliads are composed of a rosette of strappy leaves produced by a bud, the apical meristem. In most taxa, the apical meristem eventually converts to building an inflorescence for attempted sexual reproduction via flowers, with no further growth from that bud after the seeds are dispersed. Iteroparous taxa can asexually reproduced via clonal pup rosettes (“pups”) produced by axillary meristem buds found above each leaf. In stark contrast, semelparous bromeliads lack the ability to produce pups from axillary meristems. In Florida, *T. utriculata* is semelparous and *T. fasciculata* is iteroparous. These and other Florida native bromeliads are imperiled by the invasive Mexian weevil *Metamasius callizona*, whose larva will consume all of the apical meristematic tissue of large bromeliads, leaving no means of sexual reproduction (the only means of reproduction for *T. utriculata*). We construct an agent-based model to simulate the growth, reproduction, and seed dispersal of populations of *T. utriculata* and *T. fasciculata* in Myakka River State Park in Florida. This model will be used to predict future *T. utriculata* and *T. fasciculata* population demographics and spatial distribution in the wake of a *M. callizona* infestation. Additionally, this model will provide the basis for assessing the differential impact of proposed and previously implemented *M. callizona* control and eradication measures on the populations of *T. utriculata* and *T. fasciculata*.